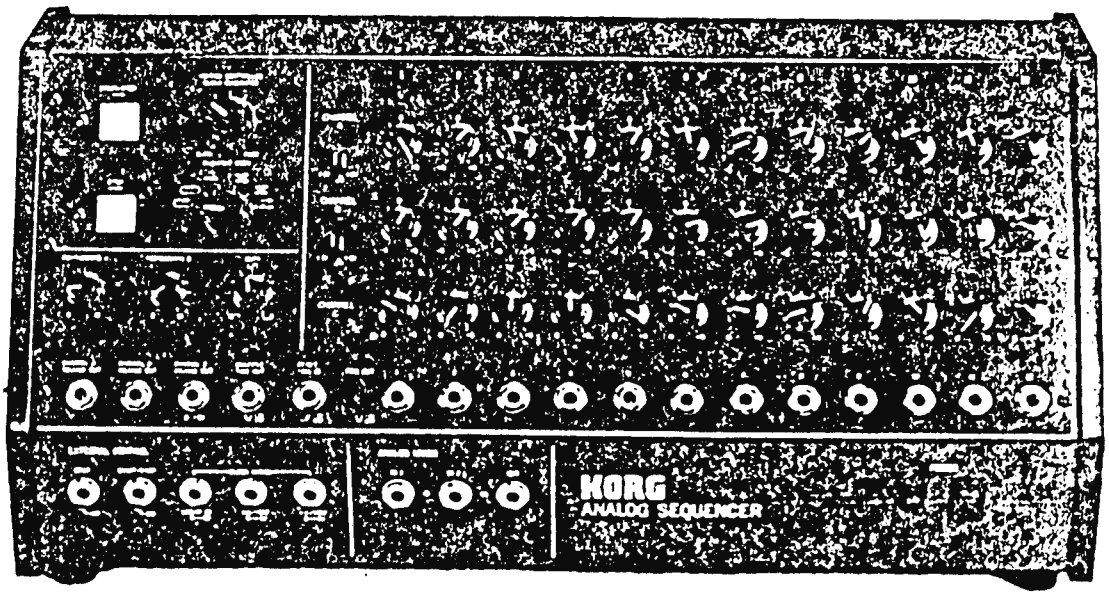
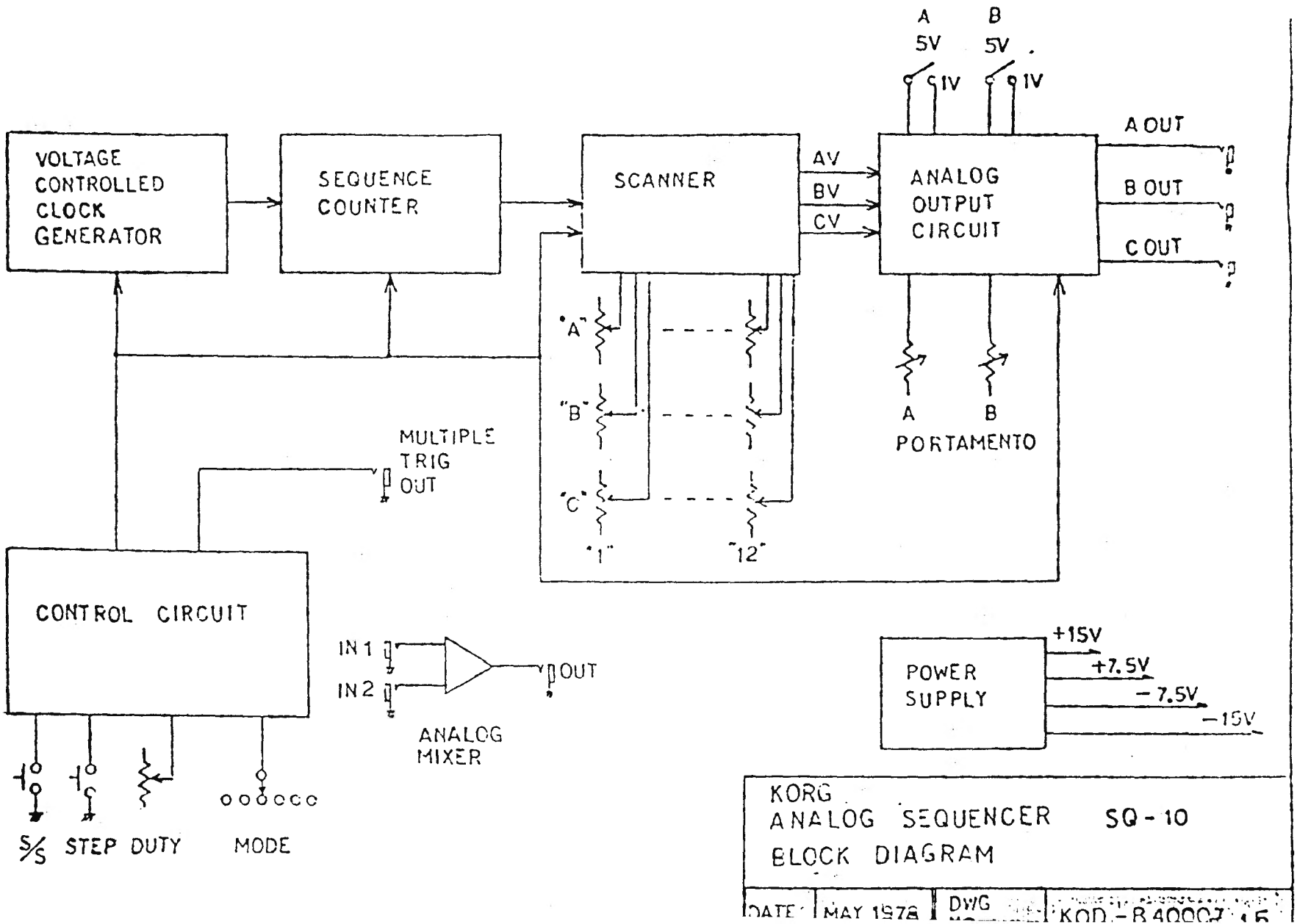
(Bad copy)

SQ-10

SERVICE MANUAL



KEIO ELECTRONIC LAB., CORP.
TOKYO, JAPAN



KORG
ANALOG SEQUENCER SQ-10
BLOCK DIAGRAM

DATE	MAY 1978	DWG	KOD-B40007

Checking and Adjustment

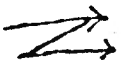
Power Check & Adjust

1. +15V; Should be 14.4V～15.6V.
2. -15V; Should be -14.4V～-15.6V.
3. +7.5V; Adjust VR46 to 7.50V.
4. -7.5V; Adjust VR47 to -7.50V.

Function Test -- Standard -- Connect MS-10 (fig 1)

Set MS-10 and SQ-10 controls (fig 2) (fig-3)

No.	Mode Rotary switch	Check
2.	＼	Clock LED flashes on and off.
3.	⟲	'12' LED turns on first. Then 1 and 2 each time step button is pressed, so the sequence goes 12 , 1 , 2. A and B LED's do not turn on in this mode.
4.	⟳	LED's 1 through 12 should be off at first. When S/S switch is pressed, sequence goes 1 , 2 .... 12 , 1 , 2 ....When S/S switch is pressed again, LED's go out. A and B do not light.
5.	→	LED's 1 through 12 should be off at first. When you turn on the S/S switch, the sequence should automatically advance 1,2,...12... and then stop after one time, If you press the S/S switch between 1 and 12, the sequence should stop. A and B do not turn on.
6.	⇄	B and 12 are on at first. A and 1 turn on when you first press the Step switch. Press it again for 2...12; again for B 1...12; and again for A 1...
7.	⤫	A and B and 1 through 12 should all be off at the beginning. When you press the S/S switch, the sequence should go A 1...12, B 1...12, A 1... automatically. Press the S/S switch again to stop.

8.  At the beginning A and B and 1 through 12 should all be off. Pressthe S/S switch and there should be a single cycle of A 1...12 and B 1...12. Then it should stop. It should also stop if you press the S/S switch while the LED's are changing.

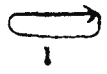
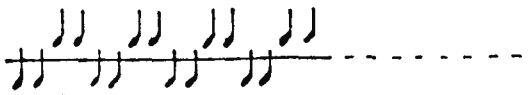
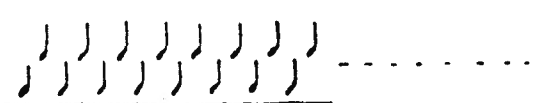
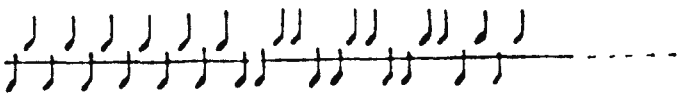
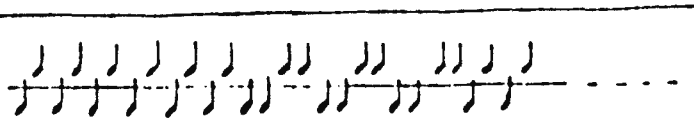
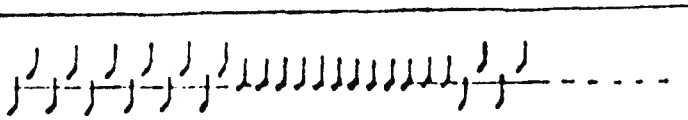
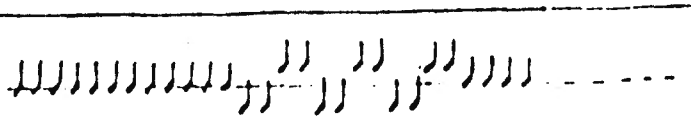
Function Test (2)

O means the phone plug connected to the MS-10 CV IN.

Ø means the phone plug connected to the opposite side (open).

SQ-10 Check 2/4

FUNCTION TEST (2)

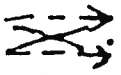
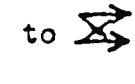
NO	MODE Rotary SW	(OUTPUT) A	B	C	musical interval
9		○			
10			○		
11				○	
12		○			
13			○		
14		○	⊗		
15		⊗	○		

OUT PUT CHECK

NO.	"1" STEP VR 3	MODE	5V-1V SW A	5V-1V SW B	Digital VOLT. MT A	Digital VOLT. MT B	Digital VOLT. MT C	measure STEP	Limit
28	"1" A B C	⊂→	5V	5V	○			"1"	+4.90 ~ +5.10 V
29			1V		○			"1"	+0.95 ~ +1.05 V
30			5V			○		"1"	+4.90 ~ +5.10 V
31				1V		○		"1"	+0.95 ~ +1.05 V
32				5V			○	"1"	+4.90 ~ +5.10 V
33		⊂→ ⊂→	5V		○			"A" "1"	+4.85 ~ +5.15 V
34					○			"B" "1"	+4.85 ~ +5.15 V
35					○			"A" "1"	−4.85 ~ −5.15 V
36	"1" A B C				○			"B" "1"	−4.85 ~ −5.15 V
37		⊂→			○			"1"	−4.90 ~ −5.10 V
38						○		"1"	−4.90 ~ −5.10 V
39							○	"1"	−0.10 ~ +0.10 V

○ Digital voltmeter to measure the Phone jack

Function Test (3)

No.	Item	Check
16	Portamento-A	Portamento effect should only show up in the channel A output when you turn up this knob.
17.	Portamento-B	Portamento should only show up in the B channel output.
18.	Duty	Should get shorter when knob is turned counter-clockwise. Should get longer when turned clockwise.
19.	Reset, Trig Out (1~11)	Connect RESET IN jack to each of TRIG OUT jacks 1 through 11 in turn, and see that the sequence returns to 1 after reaching the proper step. Disconnect after check.
20.	Trig Out (12)	With TRIG OUT 12 connected to the MS-10 TRIG IN jack, see that there is only a sound produced at the 12th step in a sequence. Disconnect after check.
21.	Step (jack)	Set mode to  . Connect MS-10 momentary switch to STEP jack and see that steps advance when you press the MS-10 switch. Set mode back to  and disconnect after check.
22.	Start/Stop (jack)	Connect MS-10 momentary switch to S/S jack,

and see that the MS-10 switch will turn the S/S on and off. Disconnect after check.

23. Linear In — Connect MS-10 control wheel ⌓ out to LINEAR IN jack, and see that the clock speed changes with input voltage. It should get faster toward +5V. Disconnect after check.

24. x2/V — Connect MS-10 ⌓ out to x2/V jack, and see that clock speed changes with input voltage. Speed increases towards +5V. Disconnect after check.

25. +2/V — Connect MS-10 ⌓ out to +2/V jack, and see that clock speed changes with input voltage. Speed should decrease toward +5V. Disconnect after check.

26. Clock — Turning the CLOCK knob all the way counter-clockwise should slow down the cycle 10sec ~ 40sec. Turning the knob clockwise should speed up the clock.

27. Analog Mixer — The sum of IN 1 and IN 2 voltages should appear in the OUT voltage.
For example: Connect MS-10 ⌓ out to IN 1;
Connect SQ-10 multiple trigger out to IN 2;
Connect MS-10 CV IN to OUT.

Multiple trigger signal should modulate pitch of note when keyboard is played (or momentary switch is pressed) on MS-10. Changing IN 1 input voltage (from control wheel) will vary entire pitch.

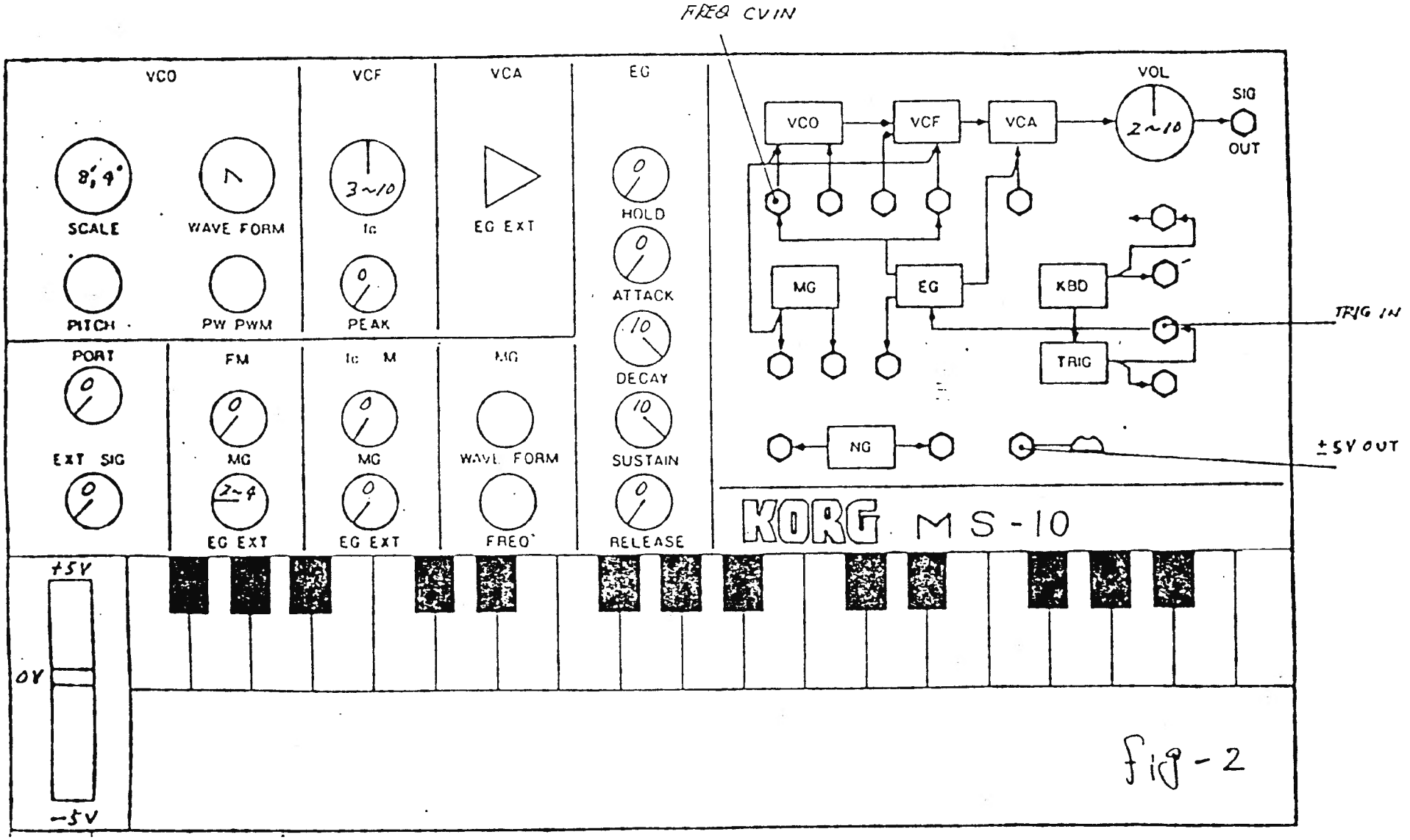

FREQ CV IN
VCO
VCF
VCA
EG
SCALE
WAVE FORM
PITCH
PW PWM
Ic
PEAK
EG EXT
HOLD
ATTACK
DECAY
SUSTAIN
RELEASE
PORT
EXT SIG
FM
MG
EG EXT
Ic M
MG
EG EXT
MG
WAVE FORM
FREQ
+5V
0V
-5V
VOL
SIG
OUT
KBD
TRIG
TRIG IN
NG
±5V OUT
KORG MS-10

fig-2

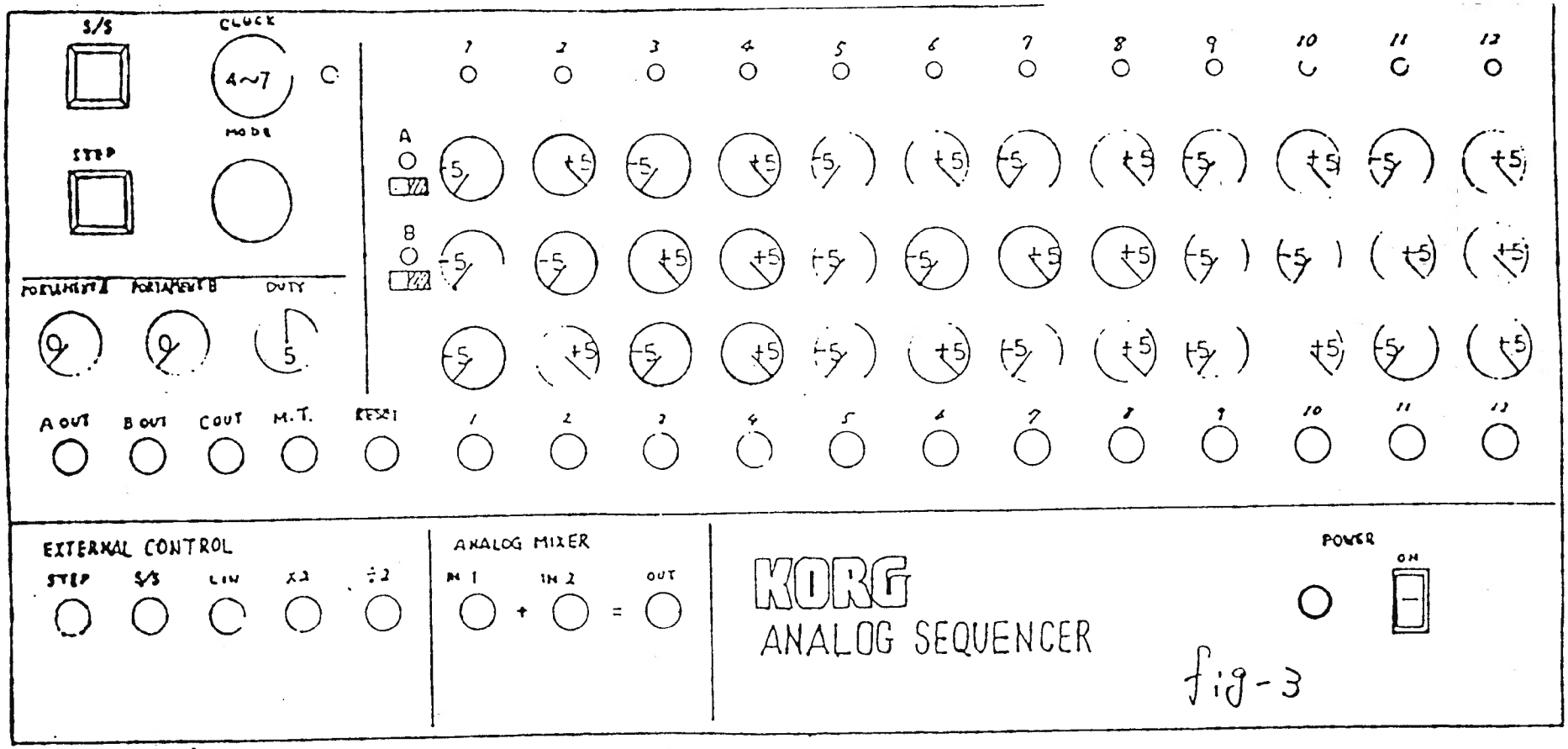
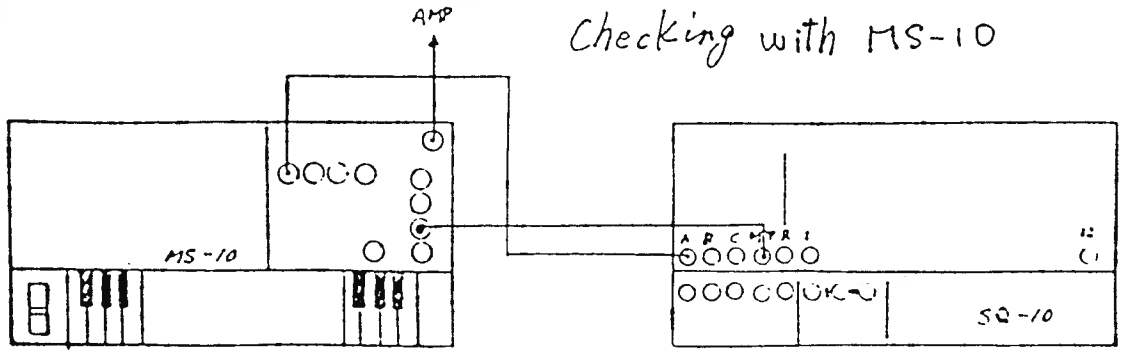


fig-3

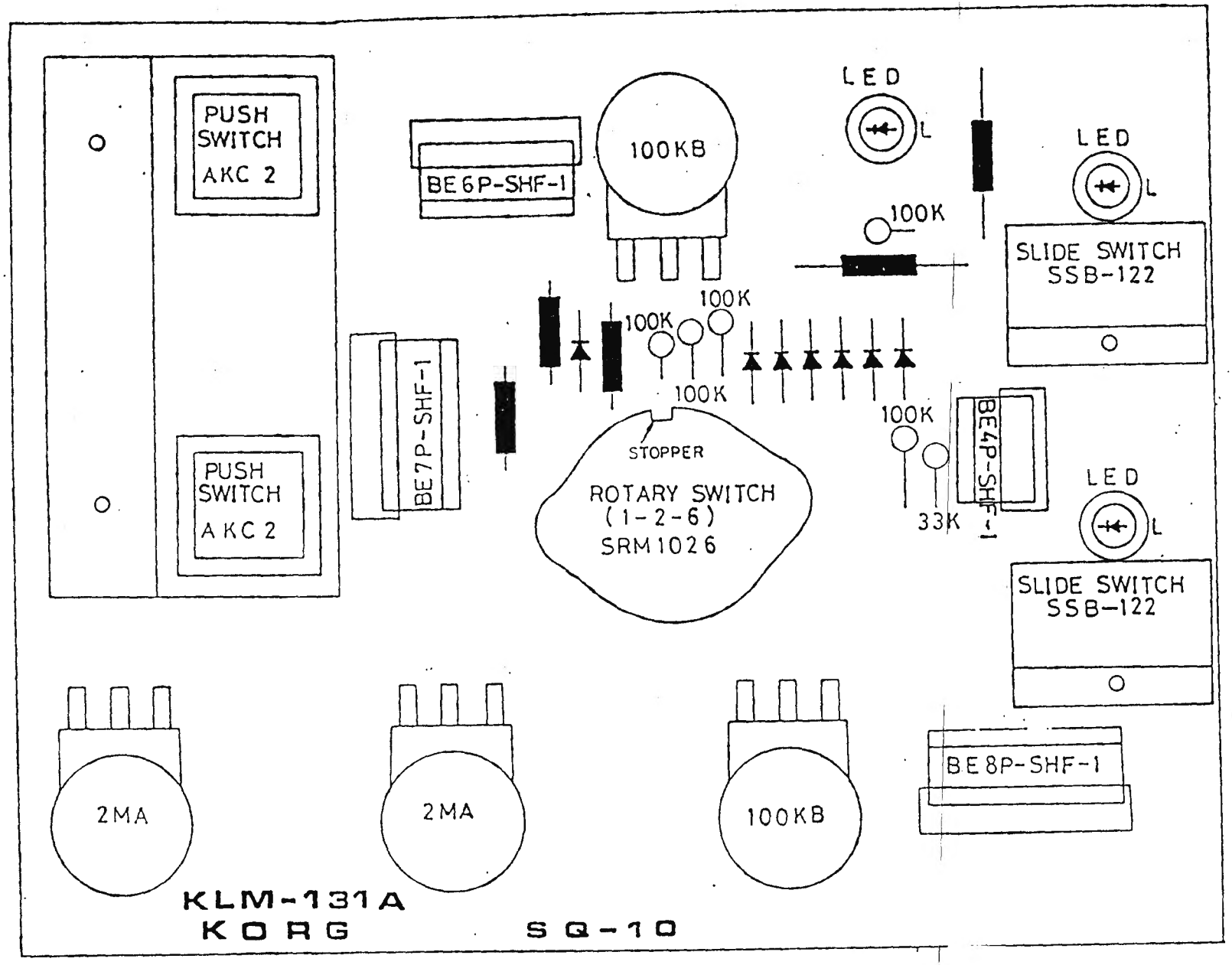
Checking with MS-10



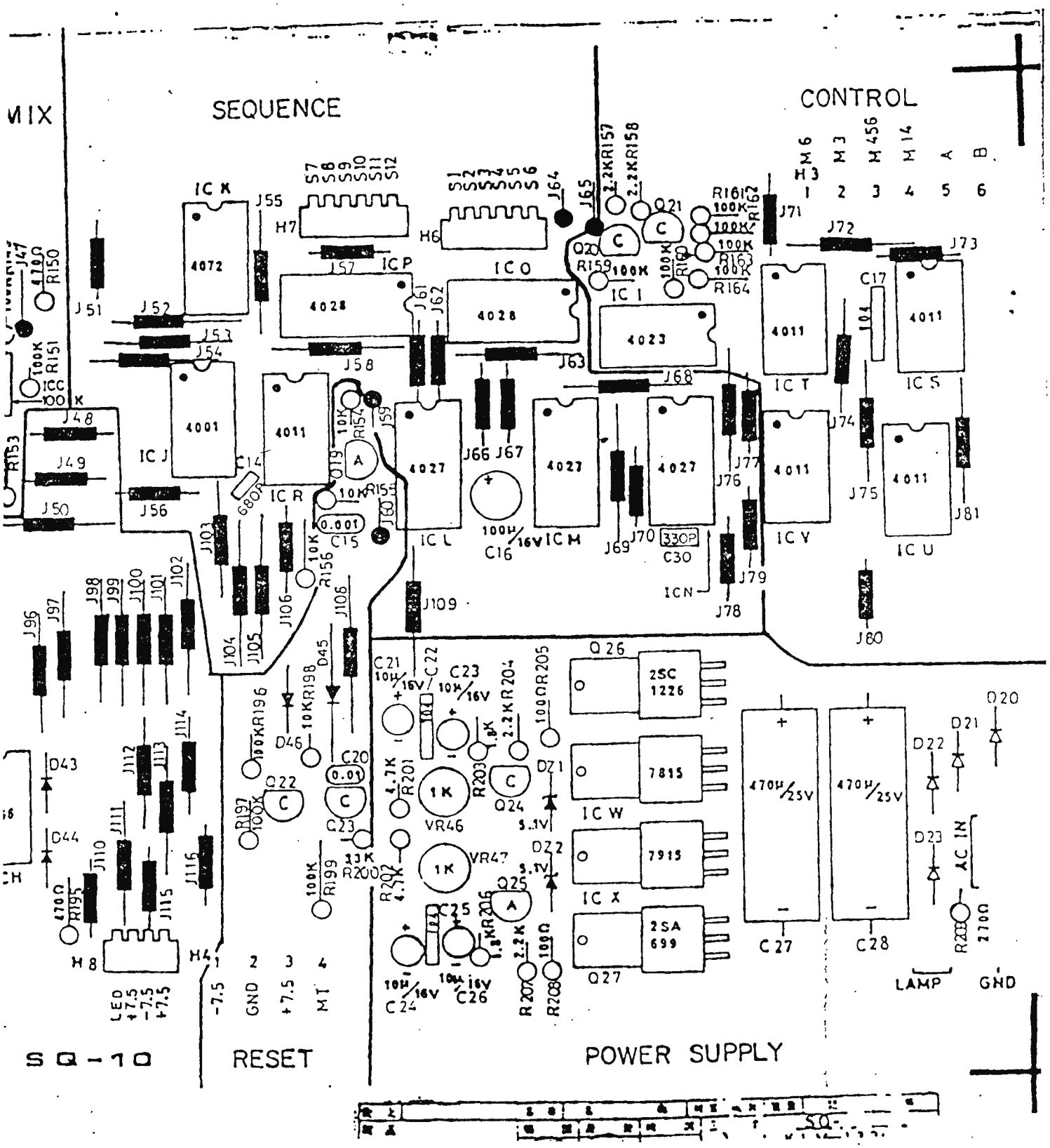
AMP	MS10	SQ-10
	VCO FREQ CVIN	A OUT
	TRIG IN	MULTIPLE TRIG OUT
INPUT	SIG OUT	

fig-1

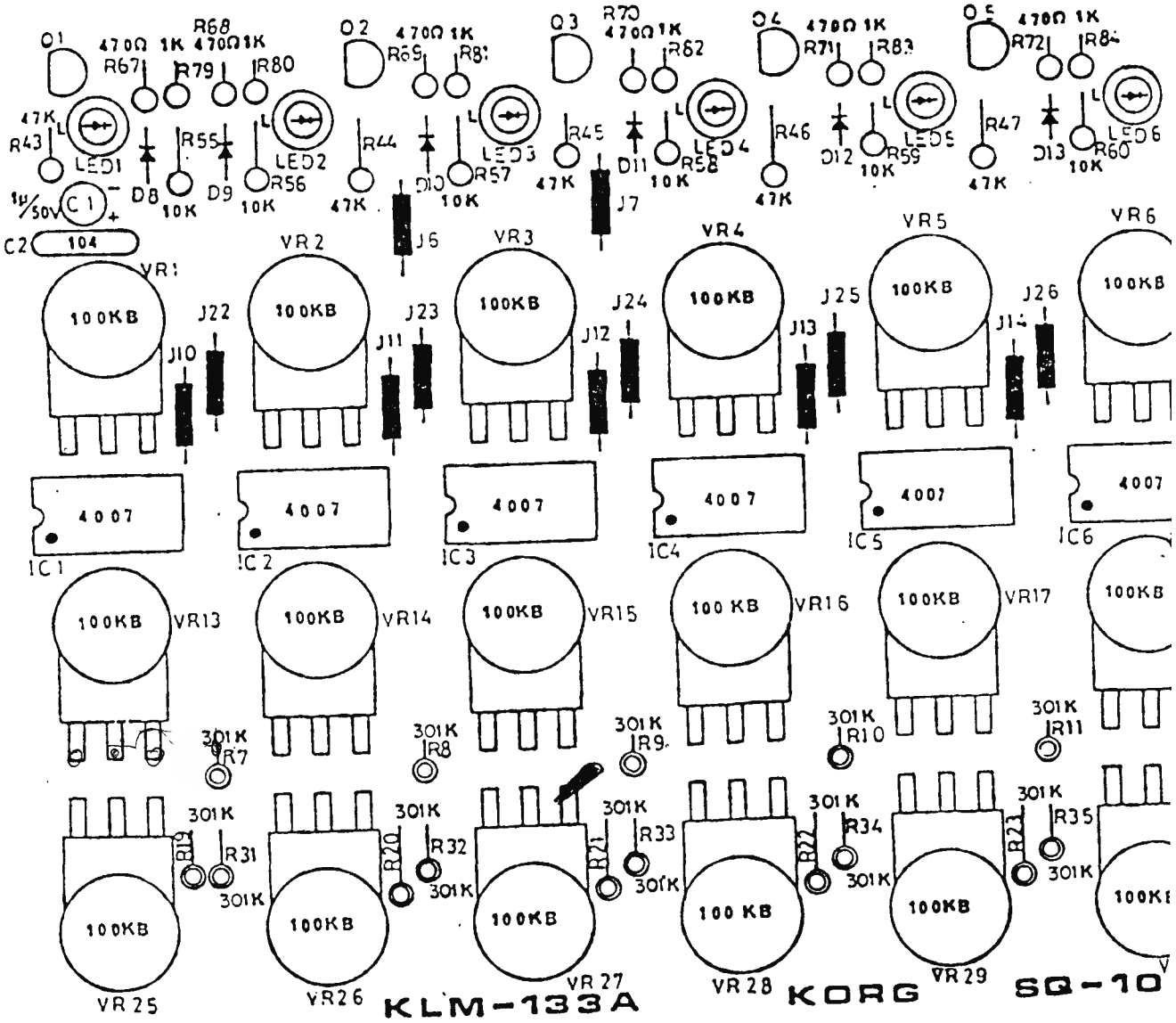
See other chart for MS-10 control settings

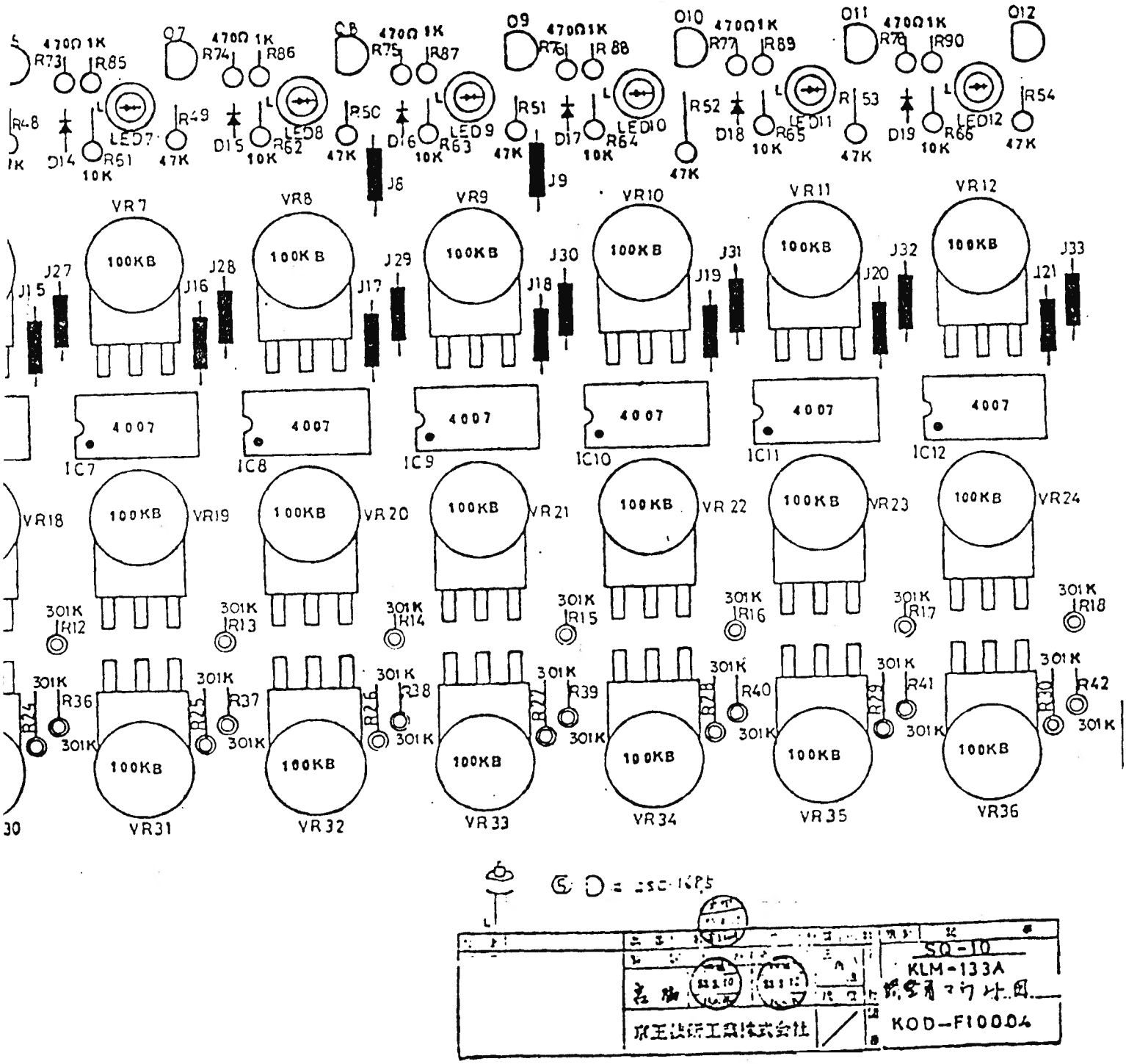

PUSH SWITCH AKC 2
PUSH SWITCH AKC 2
BE6P-SHF-1
100KB
LED
L
LED
L
100K
SLIDE SWITCH SSB-122
100K
100K
100K
100K
BE7P-SHF-1
STOPPER
ROTARY SWITCH (1-2-6) SRM1026
100K
33K
BE4P-SHF-1
LED
L
SLIDE SWITCH SSB-122
2MA
2MA
100KB
BE8P-SHF-1
KLM-131A
KORG
SQ-10

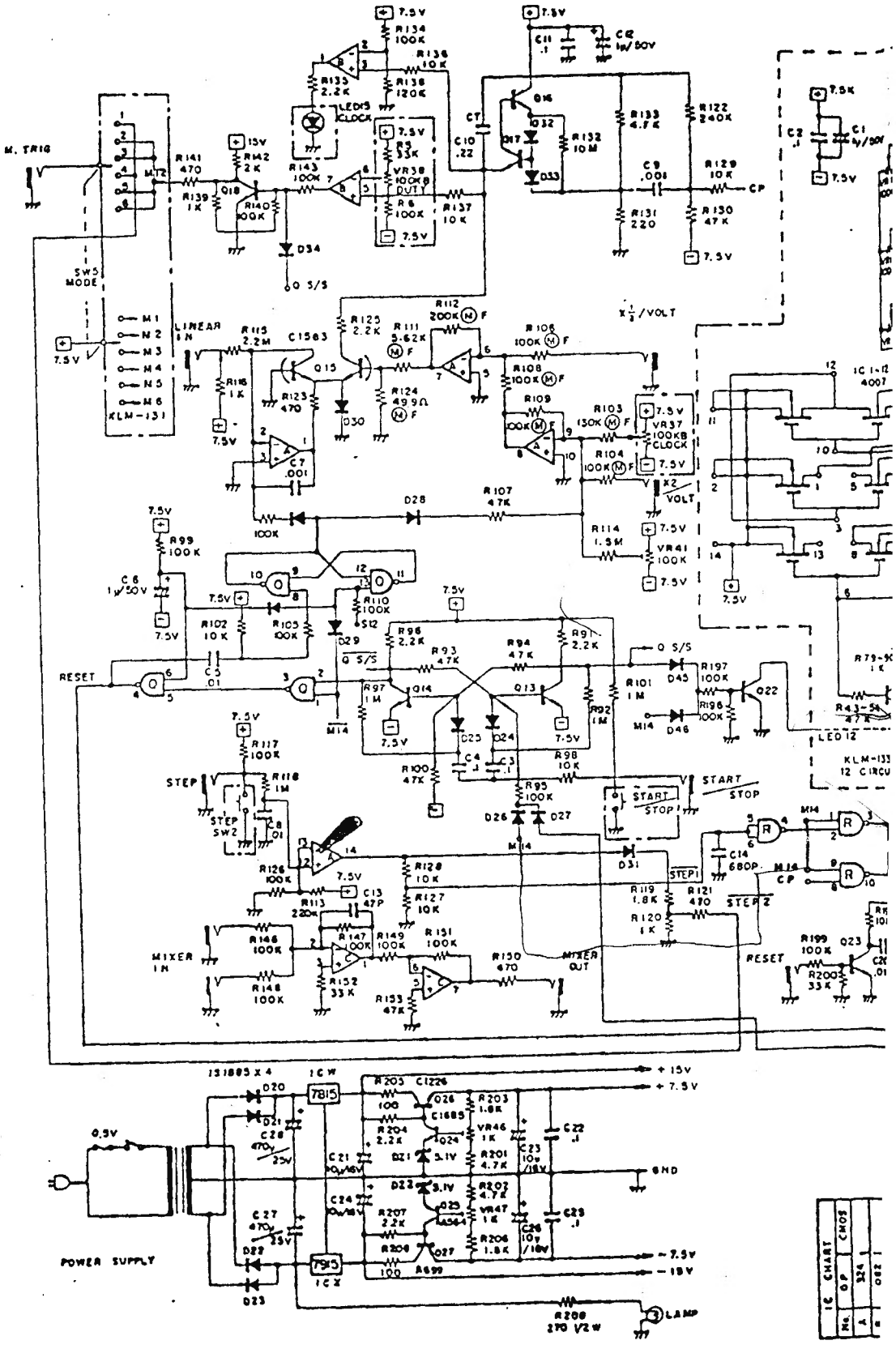
SQ10 KLM-132C

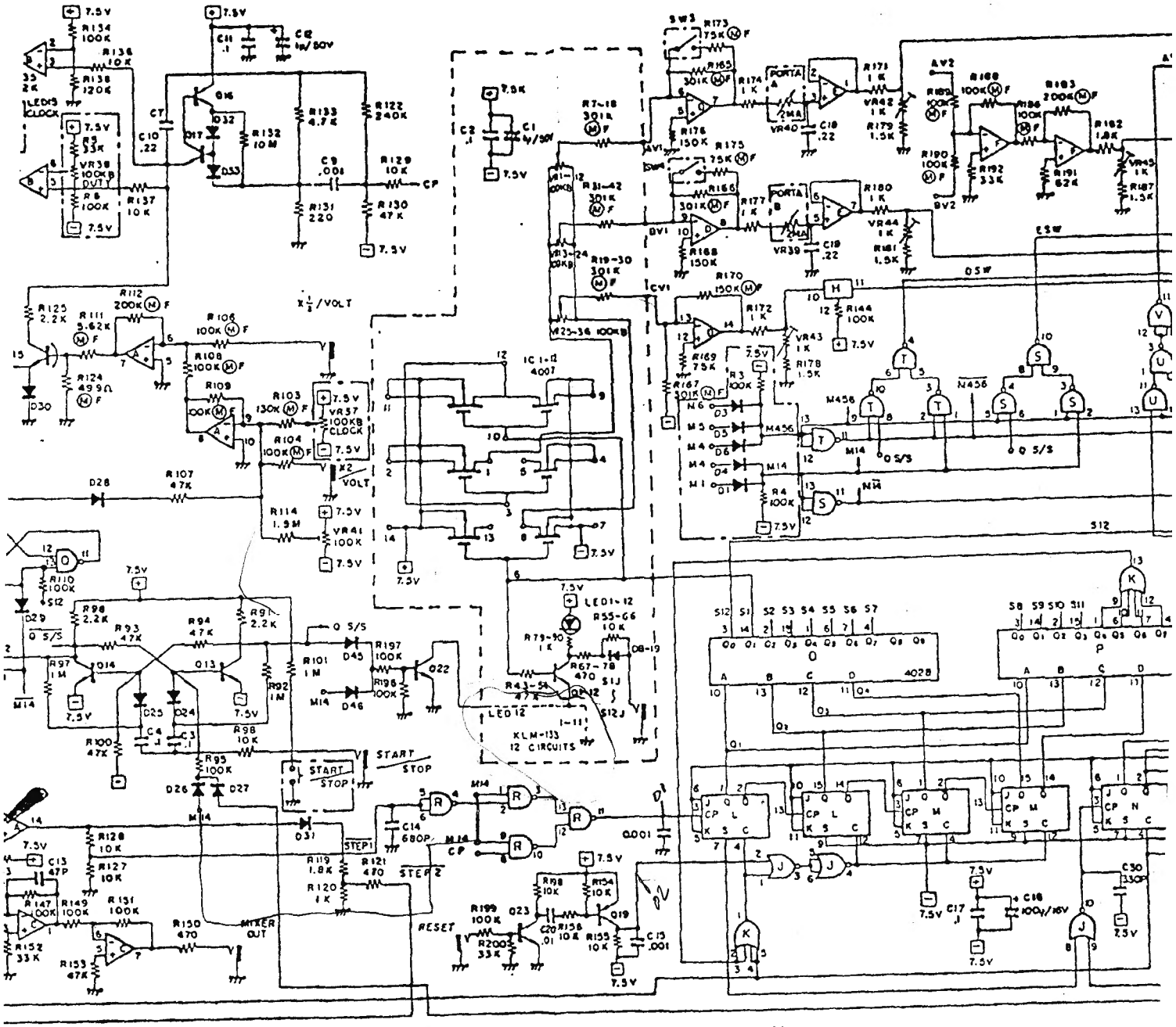

MIX
SEQUENCE
CONTROL
SQ-10
RESET
POWER SUPPLY
IC K
IC J
IC R
IC L
IC M
IC O
IC P
IC N
IC T
IC S
IC U
IC V
IC W
IC X
IC 1
4072
4001
4011
4028
4027
4023
2SC 1226
7815
7915
2SA 699
470μ/25V
VR46
VR47
LED +7.5 -7.5 +7.5
-7.5 GND +7.5 MT
LAMP GND
AC IN

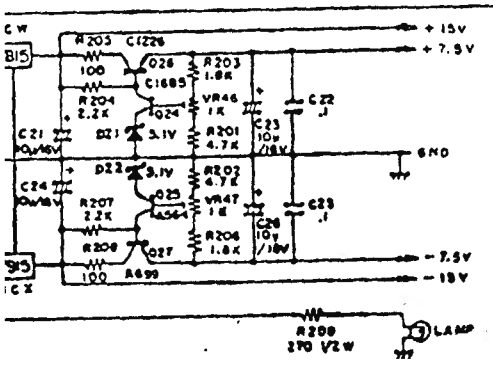
SQ10 KLM-133A




470Ω 1K
R73
R85
R74
R86
R75
R87
R76
R88
R77
R89
R78
R90
Q7
Q8
Q9
Q10
Q11
Q12
R48
R49
R50
R51
R52
R53
R54
D14
D15
D16
D17
D18
D19
LED7
LED8
LED9
LED10
LED11
LED12
R61
R62
R63
R64
R65
R66
10K
47K
J8
J9
VR7
VR8
VR9
VR10
VR11
VR12
100KB
J15
J16
J17
J18
J19
J20
J21
J27
J28
J29
J30
J31
J32
J33
4007
IC7
IC8
IC9
IC10
IC11
IC12
VR18
VR19
VR20
VR21
VR22
VR23
VR24
301K
R12
R13
R14
R15
R16
R17
R18
R24
R25
R26
R27
R28
R29
R30
R36
R37
R38
R39
R40
R41
R42
VR31
VR32
VR33
VR34
VR35
VR36
SQ-10
KLM-133A
KOD-F10004


M. TRIG
SW5 MODE
KLM-131
LINEAR
RESET
STEP
STEP SW2
MIXER
MIXER OUT
START
STOP
STEP1
STEP2
LED5 CLOCK
VR37 100KB CLOCK
VR41 100K
VR38 100KB DUTY
VR46 1K
VR47 1K
X1/VOLT
X2 VOLT
LED12
KLM-133
12 CIRCU
IC 1-12 4007
POWER SUPPLY
131885 X 4
7815
7915
A564
A699
LAMP
270 1/2 W
+ 15V
+ 7.5V
- 7.5V
- 15V
GND
IC CHART
No.
OP
A
CMOS
324
4011





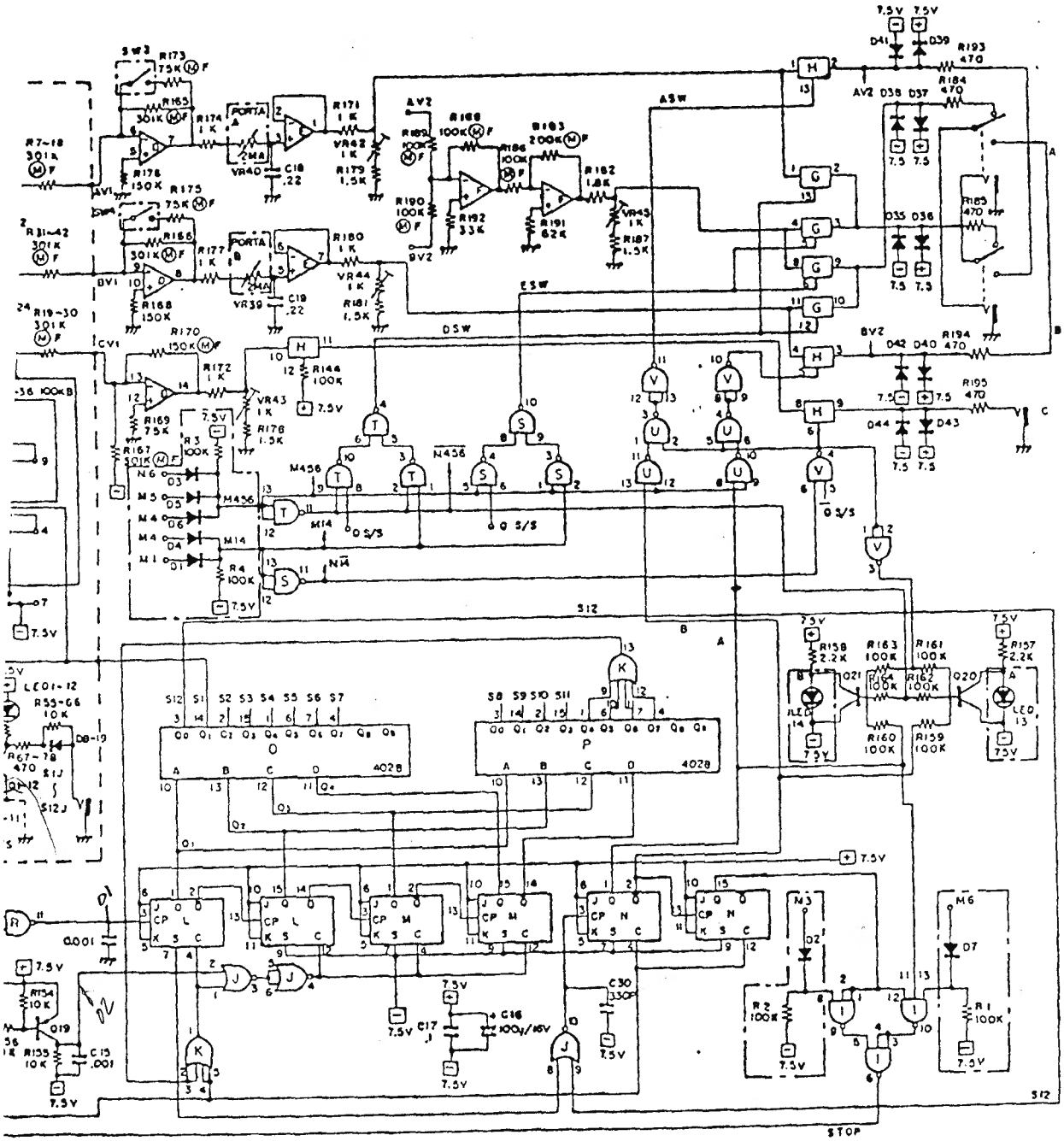
KLM132 : MAIN CIRCUIT BOARD
KLM133 : SEQUENCE CIRCUIT BOARD
KLM131 : CONTROL CIRCUIT BOARD

* 2SA564 PNP
* 2SC1683 NPN

OP Amp : ±15V
ANALOG SW : ±7.5V
DIGITAL IC : ±7.5V

IC CHART

	OP	CMOS	324	082	4558	324	082	4558	4046	4066	4023	4001	4012	4017	4027	4028	4028	4011	4011	4011	4011	4011	4011	4011	4007
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	



.MI32 : MAIN CIRCUIT BOARD
.MI33 : SEQUENCE CIRCUIT BOARD
.MI31 : CONTROL CIRCUIT BOARD

2SA564 PNP
2SC1685 NPN

OP Amp : ±15V
ANALOG SW : ±7.5V
DIGITAL IC : ±7.5V

| | | |